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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Evgeny Mikhailovich Dianov

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EXAMINER

BLEVINS, JERRY M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/519,249	DIANOV ET AL.	
	Examiner	Art Unit	
	Jerry Martin Blevins	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's cancel claims 1-16 and submit new claims 17-29. Newly submitted claims overcome objections and rejections under 35 U.S.C. 112 indicated in previous office action.

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection, specifically the citation of additional teachings of previously cited prior art reference US 6,731,837 to Goldberg et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg in view of Published European Patent Application to Sumitomo Electric Industries, number EP 0 851 247 A2, and in view of US Patent to Toyonaka et al, number 5,283,846.

Regarding claim 17, Goldberg teaches a device (Figure 4a) for protecting a fiber line against destruction by laser radiation (column 3, lines 7-35) comprising a section of an optical fiber having two portions (far right and far left of Figure 4a), each portion of

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the two portions having a cladding (above and below core 10) that is of a first diameter, the optical fiber also having a cladded, reduced-diameter portion between the two portions (center of Figure 4a), wherein the cladded, reduced-diameter portion is formed directly in the section (column 13, lines 3-26) so that a fiber core within the section of the optical fiber has a constant diameter throughout the two portions and the cladded, reduced-diameter portion (Figure 4a). Goldberg does not teach that the cladded, reduced-diameter portion has at least at one part, a length greater than or equal to 10 times the mode field diameter of the optical fiber section, a cross-section diameter parameter greater than the mode field diameter but less than or equal to the minimum of 4 times the mode field diameter and 40 micrometers. Sumitomo teaches an optical fiber with mode field diameter about 8 micrometers (column 2, lines 29 and 30) and a cladding diameter between 25 and 40 micrometers (abstract). Therefore, Sumitomo teaches a range of cladding diameter (25 to 32 micrometers) which is greater than the mode field diameter but less than or equal to 4 times the mode field diameter (which is less than 40 micrometers). Although the range of Sumitomo overlaps the indicated range of the claim, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add to Goldberg the teaching of Sumitomo. The motivation would have been to improve fiber protection by defocusing the radiation in the fiber (Goldberg, column 5, lines 48-58). Toyonaka teaches an optical fiber with constant core diameter and cladding, where the fiber length

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is 50 cm and the mode field diameter is 8 micrometers. Therefore, Toyonaka teaches the indicated length range of the claim. It would have been obvious to one of ordinary skill in the art at the time of the invention to add to Goldberg the teaching of Toyonaka. The motivation would have been to improve fiber protection by defocusing the radiation in the fiber (Goldberg, column 5, lines 48-58). Although Goldberg teaches a fiber diameter, which would suggest that the fiber is cylindrical, Goldberg does not explicitly teach that the optical fiber section is cylindrical. Sumitomo teaches a cylindrical fiber section (Figure 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to add to Goldberg the teaching of Sumitomo. The motivation would have been to improve coupling to a cylindrical fiber being protected.

Regarding claim 18, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Goldberg also teaches that the optical fiber cladding is made of silica-based glass (column 13, lines 3-26).

Regarding claim 19, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Goldberg also teaches that the cladded, reduced-diameter portion is formed in situ in the fiber line to be protected (column 9, line 66 – column 10, line 6).

Regarding claim 20, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Goldberg also teaches that the cladded, reduced-diameter portion is fabricated by etching (column 6, lines 13-26, column 7, lines 38-50, and column 12, lines 53-62).

Regarding claim 21, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Goldberg also teaches that the cladding of the cladded, reduced-diameter portion is coaxial with the fiber core (Figure 4a).

Regarding claim 23, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Goldberg also teaches that the optical fiber section is connected into a fiber line by splicing (column 9, line 66 – column 10, line 6).

Regarding claim 22, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 17. Although Goldberg does not specifically teach connecting by optical connectors, Goldberg does teach that the optical fiber section is connected into a fiber line by splicing (column 9, line 66 – column 10, line 6), which is an obvious variant of optical connectors and serves identical functionality. It would have been obvious to one of ordinary skill in the art at the time of the invention to connect the optical fiber section of Goldberg by optical connectors. The motivation would have been to allow for easy disconnection.

Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg in view of Sumitomo.

Regarding claim 24, Goldberg teaches a device (Figure 4a) for protecting a fiber line against destruction by laser radiation (column 3, lines 7-35) comprising a section of an optical fiber line having first and second portions (far right and far left of Figure 4a), each of the first and the second portions having an optical fiber cladding (above and below core 10) that has an identical diameter and a circumferential groove (12) in the

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cladding between the portions, wherein the groove is formed directly in the section (column 13, lines 3-26, Figure 4a) so that a fiber core has a constant diameter throughout the section (Figure 4a). Goldberg does not teach that the groove has a width no less than 10 times the mode field diameter and a depth so that a cladding diameter is greater than the mode field diameter and less than the minimum of 4 times the mode field diameter and 40 micrometers. Sumitomo teaches an optical fiber with mode field diameter about 8 micrometers (column 2, lines 29 and 30) and a cladding diameter between 25 and 40 micrometers (abstract). Therefore, Sumitomo teaches a range of cladding diameter (25 to 32 micrometers) which is greater than the mode field diameter but less than or equal to 4 times the mode field diameter (which is less than 40 micrometers). Although the range of Sumitomo overlaps the indicated range of the claim, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add to Goldberg the teaching of Sumitomo. The motivation would have been to improve fiber protection by defocusing the radiation in the fiber (Goldberg, column 5, lines 48-58). Goldberg also teaches the benefits for a large groove width. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the groove of Goldberg such that it has a width of no less than 10 times the mode field diameter. The motivation would have been to increase the alignment tolerance (Goldberg, column 8, line 50 – column 9, line 6).

Regarding claim 25, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 24. Goldberg also teaches that the optical fiber cladding is made of silica-based glass (column 13, lines 3-26).

Regarding claim 26, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 24. Goldberg also teaches that the cladded, reduced-diameter portion is formed in situ in the fiber line to be protected (column 9, line 66 – column 10, line 6).

Regarding claim 27, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 24. Goldberg also teaches that the cladded, reduced-diameter portion is fabricated by etching (column 6, lines 13-26, column 7, lines 38-50, and column 12, lines 53-62).

Regarding claim 29, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 24. Goldberg also teaches that the optical fiber section is connected into a fiber line by splicing (column 9, line 66 – column 10, line 6).

Regarding claim 28, Goldberg in view of Sumitomo and Toyonaka renders obvious the limitations of the base claim 24. Although Goldberg does not specifically teach connecting by optical connectors, Goldberg does teach that the optical fiber section is connected into a fiber line by splicing (column 9, line 66 – column 10, line 6), which is an obvious variant of optical connectors and serves identical functionality. It would have been obvious to one of ordinary skill in the art at the time of the invention to connect the optical fiber section of Goldberg by optical connectors. The motivation would have been to allow for easy disconnection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB


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